Space Weather Forecast

Issued on Sunday, 06 March 2022 at 13:31 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of further G1/Minor Geomagnetic Storms initially. Daily Chance of R1 Minor Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity was low over the period, with occasional common-class flares observed. These flares peaked with a small but long-lasting flare at 05/2022 UTC from a sunspot region in the sun's northeastern quarter. This area was one of the suggested locations for increased flare activity as it crossed from the sun's far side late last week.
There are currently five sunspot regions on the sun including the aforementioned one, with the sunspot responsible for the moderate-class flare of 02 March also present - this is the source of the possible CME in the forecast during the next 12-18 hours. A further sunspot faded in the southwestern quarter of the sun, leaving two further groups that dominate the Earth facing side. These both appear stable.
There are possibly two Earth-directed CMEs in the forecast. The first may result in a glancing blow on day 1 (6 March) or on day 2 (7 March). The second is not expected to arrive until day 5 (10 March), so beyond the range of this forecast, however, the inevitable uncertainty of a forecast at this range means there is a slight chance it will arrive on day 4 (9 March).

Solar Wind / Geomagnetic Activity: Earth is currently experiencing an elevated fast wind from a coronal hole. The number of particles in the wind increased from average to slightly above average. The magnetic field was moderate before easing to background, though aligned almost completely counter to Earth's field for long periods, this resulted in G1 minor geomagnetic storm intervals between 05/1800-2359 UTC and 06/0600-0900 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be low, with further occasional common-class flares and a chance of moderate-class. No significant regions are expected to rotate onto or leave the sun through the period.
Solar Wind / Geomagnetic Activity: There remains a chance of G1/Minor Storm from the current fast wind on day 1 and perhaps at first on day 2 (6-7 March), with this risk further bolstered as a result of the uncertain influence of a CME. Activity should wane into day 3 (8 March), but with the caveats into day 4 due to the uncertainties surrounding a further CME arrival.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	40	20	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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